

Syntactic Constructions in Serial Verb Expressions in Chinese*

John Xiang-ling Dai
Department of Linguistics, The Ohio State University

1. Abstract

This paper investigates the syntactic constructions of serial verb expressions (two verbs in sequence as V1+V2) in Mandarin Chinese. At least three distinct constructions are identified: coordination, subordination and serialization. The first two have been widely presented in the literature as the serial verb construction, but we will argue that they can, and should, be adequately analyzed as what have traditionally been called coordination and subordination, based on their grammatical behaviors with respect to the Coordinate Structure Constraint, the distributional difference between A-not-A and alternative questions, the agreement in aspect, the scopes of the negators, and the phonological marking for coordinate structure. Concerning the third construction, serialization, we will claim that the lai-construction belongs to this type. Called the serial verb construction (SVC) in this paper, the lai-construction is shown to share some properties with subordination and some with coordination, but it differs from both of them with respect to the other properties. In particular, the rule of VP2-fronting cannot apply as it would in a subordinate structure, giving rise to the conjecture that the V2 and its object argument in serialization do not form a syntactic constituent. Other correlates of the lai-construction as the SVC will be discussed: the obligatory agreement in aspect between V1 and V2, the prohibition of negation on V2, among others. We further observe that nothing may intervene between V1 and V2. Such a strict intervention constraint leads us to a stronger claim: V1+V2 constitutes a morphological word in the construction. Supporting evidence in phonology comes from the participation of V1+V2 in the word internal sandhi, traditionally called Final Elision. More crucially, an aspect marker cannot be suffixed to V1 as it could in the other constructions, demonstrating that V1 is not a morphological word.

2. Introduction

Not all serial verb expressions may deserve the name the serial verb construction (SVC). We assume that SVC is a marked construction, different from coordination and subordination, which are independently motivated across languages. Therefore, the methodology to be adopted here is that, in analyzing a serial verb expression, we first check whether it is coordination proper. If it is not, then we check whether it is subordination proper. Only being neither coordination nor subordination, can the expression then possibly be regarded as genuine SVC.

The term "serial verb" is typically used in the linguistic literature on some African languages, where the construction is made up of a subject and two or more adjacent predicate verb phrases. Chao (1968: 325) claims that Chinese verbal expressions in series form an intermediate type of construction between subordinate and coordinate constructions, but are closer to the latter. Li and Thompson (1973: 96-103) recognize verbs in sequence as one of the most common sentence types in Chinese. But they seem to conclude that the serial verb construction can be reduced to coordinate and subordinate constructions. Thus,

by implication, in their analysis, the serial verb construction is a redundant notion in the grammar of Chinese.

The status of verb serialization in some African languages according to Noonan (1985: 55-57, 77-82) is that the construction, or rather, a family of constructions, is aligned with parataxis (roughly, coordination without overt markings) in a few morphosyntactic aspects, thus should be distinguished from hypotaxis (subordination); however, serialization and parataxis are different in a number of morphosyntactic respects. In lectures, Zwicky¹ has further developed Noonan's framework, pointing out that serial and paratactic constituents all bear the same grammatical relation (GR) to a single external constituent, and bear no GR to one another. On one hand, the characteristic of non-GR sharing distinguishes the two constructions from hypotaxis; on the other hand, the different morphosyntactic behaviors between serialization and parataxis are the consequences of single headedness in serialization vs. multiple headedness in parataxis.

In this paper, we wish to show that the serial verb expressions in Chinese have at least three distinct syntactic constructions: coordination (or parataxis), subordination (or hypotaxis) and serialization. We will call serialization the serial verb construction (or SVC), in contrast with the neutral term serial verb expression or verbs in series, referring to sequential verb phrases for all three constructions, especially to the coordinate and subordinate constructions.²

In particular, we will demonstrate that the verbs in series in Chinese widely presented in the literature as SVC is not well supported in the restrictive theory of serialization of Noonan and Zwicky. We will review the analysis in Li & Thompson (1973) and provide more evidence from the syntax, morphology, semantics and phonology of the language to support a reductionalist view (section 3). The Coordinate Structure Constraint (CSC, Ross 1967), the distributional difference between A-not-A and alternative questions, the agreement in aspect, the scopes of the negators, and phonological marking for coordinate structures all seem to work together to identify coordination from among of the serial verb expressions.

In distinguishing between subordination and serialization, we hypothesize that, for a construction to qualify as a SVC in the language, the second verb (V2) in series would not form a syntactic constituent with its own semantic object argument or modifier, in contrast to hypotaxis in which the V2 DOES. And a strict intervention constraint disallows any element to intervene between V1 and V2 in the SVC. Thus in our analysis, not only the so-called "SVC" in Li & Thompson (1973), but similar constructions for co-verb and pivotal sentences, are excluded from serialization for the same reason that hypotaxis is (section 4).

The lai-construction is examined (section 5). We will show that its V2 in series seems to behave like a lexical (V) complement to the first verb (V1) in serialization, rather than a phrasal (VP) complement in subordination, leading to the conclusion that the lai-construction is a real serialization in Chinese. The construction has three correlates to SVC: the intervention constraint between V1 and V2, the obligatory concord in aspect between V1 and V2 and the prohibition of negation placed on V2.

One of the crucial properties of the SVC is that no element of any sorts may

intervene between V1+V2 in the lai-construction. The intervention constraint provides an important piece of evidence for claim that the verbs in series form a morphological word (section 6). We support this claim by first demonstrating that V1+V2 forms one phonological word, since the word internal sandhi Final Elision applies across the boundary between V1 and V2 in the construction. In addition, the fact that the aspect marker *-le* CANNOT be morphologically attached to V1 as it CAN to V2 indicates that there is no morphological word boundary between V1 and V2. Finally, we abandon our earlier hypothesis that the V2 and its following sister constituent in SVC do not form a syntactic VP constituent, in order to capture the generalization that the two do form a VP constituent elsewhere in Chinese. Thus, in our analysis, V2 and its object form the same syntactic constituent VP2 in serialization as in subordination. The barring of the application of the VP2-fronting in SVC is then due to a universal morphological and phonological constraint: the prohibition on breaking the constituency of proper parts of a word.

3. Identifying Coordination in the Serial Verb Expressions

Li & Thompson (1973: 96, henceforth LT) assume that serial verb sentences are composed of a subject and two predicates, as in (1) with examples in (2) and (3):

- (1) NP V1 (NP) V2 (NP)
 Subject Predicate1 Predicate2
- (2) Ni *gui-xialai* *qiu* Zhang-san.
 you kneel down beg Zhang-san
- (3) Zhang-san *gin-qu* *mai piao*.
 Zhang-san go in buy ticket

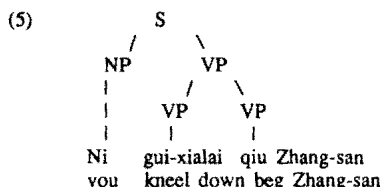
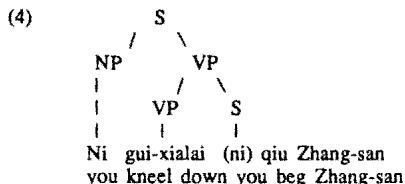
If the above data were from the Affrican language Ga~, we would see that V1 *gui-xialai* and V2 *qiu* in series in (2) would share the tense-aspect marking, in agreement with the subject, while there would be no internal GR between V1 and V2. Thus the SVC would be distinguished from parataxis in Lango on one hand, and from hypotaxis on the other hand (see examples in Noonan (1985: 55-56, 77-82)). But in the Chinese data above, the "SVC" remains to be justified because of lack of proper inflectional morphology marking syntactic agreement and government. (2) and (3) could well be coordination or subordination. Therefore, like traditional Chinese linguists, LT start their analysis with the semantics.

The semantic interpretations of (2), for instance, are always ambiguous, as below:

- (2) a. You knelt down in order to beg Zhang-san. (Purpose)
 a'. You begged Zhang-san by kneeling down. (Manner)
 b. You knelt down and then beg Zhang-san. (Consecutive action)
 c. You knelt down begging Zhang-san. (Simultaneous action)
 d. You knelt down and begged Zhang-san. (Alternating action)

(2a') is not on LT's list. We add it for the purpose of discussion. ((2a) and (2a') are different in the location of the center of the predication.) Although (2a) is the preferable reading according to "the knowledge of the world" (LT: 98), the other four are all reasonable interpretations. LT (p.100) optimally account for (2) by presenting syntactic

evidence supporting two (deep) structures for (2), a subordinate one in (4), expressing purpose as in (2a), and a coordinate one in (5), expressing any of the conjunction readings in (2b), (2c) or (2d) (We have slightly modified both (4) and (5)).



Let us now discuss the evidence supporting the structural distinction between (4) and (5). First, according to LT, only on a purpose interpretation may the object of V2, *Zhang-san*, be topicalized, as illustrated in (6); and only on a purpose reading may the entire VP2 be preposed, given that VP1 is preceded by some auxiliary, as in (7).

- (6) *Zhang-san*, *Ni gui-xialai qiu*.
Zhang-san, you kneel down beg
 'Zhang-san, you kneel down to beg'
- (7) *Qiu Zhang-san dei gui-xialai*.
 beg Zhang-san, must kneel down
 'To beg Zhang-san, one must kneel down.'

As pointed out by LT, these two facts fall out naturally, given the universal Coordinate Structure Constraint (CSC) in Ross (1967), which is shown to hold in Chinese (Tai 1973: ch. 4, Dai 1990c, etc.): Extraction is impossible from the coordination in (5), but possible and allowed in subordination in (4). Here we supply more supporting evidence with respect to the CSC. V1 may have an independent object, as in (8a), associated with both subordination and coordination readings. Preposing the V1's object gives only the subordination reading, as predicted by the CSC, as in (8b).

- (8) a. *Ta jian-qilai na gen gunzi da ren*.
 he pick up that Measure stick hit people
 'He picked up that stick in order to hit people.' (Purpose)
 'He picked up that stick and then hit people.' (Consecutive action)
- b. *Na gen gunzi, ta jian-qilai da ren*.

- that Measure stick he pick up hit people
 'He picked up that stick in order to hit people.' (Purpose)
 *'He picked up that stick and then hit people.' (Consecutive action)

LT assume that the negation morpheme *bu* has a single predicate as its scope, while *bushi* may have more than one predicate as its scope. As might be expected, (9a) with *bushi* can be interpreted as conjunction, but (9b) with *bu* cannot be; it can only be interpreted as a subordination.³

- (9) a. Wo bushi gui-xialai qiu Zhang-san.
 I not kneel down beg Zhang-san
 'It is not the case that I knelt down and begged Zhang-san.'
 b. Wo bu gui-xialai qiu Zhang-san.
 I not kneel down beg Zhang-san
 'I do not kneel down to beg Zhang-san.'

A distributional difference between A-not-A questions and alternative questions marked by the disjunction morpheme *haishi* 'or' or its variants is that the former must be located on the left edge of a maximal phrase (usually of a VP predicate), but the latter is not necessarily so (Dai 1990a). LT observe that only a purpose reading can undergo A-not-A question formation, and propose that A-not-A must be incorporated in the main verb V1, as in (10a). It follows that an A-not-A form at the right edge is unacceptable, as in (10b), grammatically in contrast to (10c), in which an alternative question occurs at the right edge. Two predictions follow automatically: First, (10c) enforces a conjunction reading. Second, any extraction of V2 object is impossible, because of the violation of the CSC, as in (10d).

- (10) a. Ni gui-bu-gui-xialai qiu Zhang-san?
 you kneel not kneel down beg Zhang-san
 'Do you kneel down to beg Zhang-san?'
 b. *Ni gui-xialai qiu-bu-qiu Zhang-san?
 you kneel down beg not beg Zhang-san
 c. Ni gui-xialai qiu-shi-bu-qiu Zhang-san?
 you kneel down beg or not beg Zhang-san
 'Do you kneel down and beg Zhang-san?'
 d. *Zhang-san, Ni gui-xialai qiu-shi-bu-qiu?
 Zhang-san you kneel down beg or not beg

V1 and V2 in paratactic constructions do not have to agree in tense and aspect (Noonan 1985: 77). This bears on the issue here. Chinese has a few aspectual markers, *zhe* for progressive and *le* for perfective, for instance. As expected, (11a) can only have conjunction readings, for V1 is marked with *le* but V2 is differently marked with *zhe*. It also follows that (11a) is subject to the CSC, i.e., *Zhang-san* is not allowed to be fronted, as in (11b).

- (11) a. Li-si gui -le -xialai qiu-zhe Zhang-san.
 Li-siu kneel Perf. down beg Prog. Zhang-san
 'Li-si had knelt down and was begging Zhang-san.' (Consecutive action)
 *'Li-si had knelt down to be begging Zhang-san.' (Purpose)
- b. *Zhang-san, Li-si gui-le-xialai qiu-zhe.

Phonological evidence also supports the structural distinction between (4) and (5) for (2). Phonological pause and falling intonational ending may mark coordinate expressions in Chinese, though the most natural of these expressions is without pauses or special intonation contours (Chao 1968: 262-264). While ambiguity may arise if there is no pause or falling ending between VP1 and VP2, only a paratactic reading can be obtained when they are in place, marked as comma in (12). Needless to say, the CSC disallows any extractions here.

- (12) Ni gui-xialai, qiu Zhang-san.
 you kneel down beg Zhang-san
 'You knelt down and then begged Zhang-san.' (Consecutive action)
 *'You knelt down to beg Zhang-san.' (Purpose)

So far we have provided more evidence to single out coordination from the serial verb expressions. The most convincing evidence for coordination is its sensitivity to the CSC: Nothing can be extracted from its conjuncts, as illustrated in (6) and (7) etc., which do not have the conjunction readings. In a coordination, two VPs do not have to agree in aspect, as shown in (11), hence enforcing a conjunction reading only. The coordination status is supported by the scopes of the negators: The negation of the whole scope by *bushi* is allowed for coordination readings only, as indicated in (9a). Other evidence for the coordination analysis comes from the distributional difference between A-not-A and alternative questions, and from the pause and intonation marking coordination in the language.⁴

Before getting to the distinction between subordination and serialization, we wish to show that the putative verbs in series in Chinese in the literature does not fit into the notion of serialization suggested by Noonan and Zwicky. More importantly, all sentences of the verbs in series, represented by (2), can be adequately classified into either coordinate or subordinate constructions, which are independently motivated in the syntax of Chinese, leading to the claim that the "SVC" for the putative verbs in series is not only spurious but also extraneous (but see section 5). For convenience, let us first list the similarities and distinctions between serialization and parataxis in Noonan (1985: 55), elaborated by Zwicky, who suggests that VX serialization shares the following properties with VX parataxis.

- (13) a. A single constituent (subject NP or complement-taking V) with which the verbs are in construction;
 b. The possibility of multiple, flat VX;
 c. Full inflection on each VX;
 d. No marker of subordination (or coordination) linking the VXs;
 e. No special mood forms for non-first VX; instead, parallelism for all VXs.

Thus, according to Zwicky, serial and paratactic constituents all bear the same grammatic relation (GR) to a single external constituent, and bear no GR to one another. The characteristics of non-GR sharing distinguish the two constructions from hypotaxis on one hand. On the other hand, serialization and parataxis differ semantically and morphosyntactically, as below.

- (14) a. Serialization contains only one assertion, whereas parataxis contains two or more assertions;
- b. Serialization has obligatory agreement in tense/aspect, whereas parataxis does not;
- c. Serial VX allows only one negation for the entire scope, whereas paratactic VXs can be independently negated.⁵

Thus the syntactic difference between serialization in Ga~ and parataxis in Lango are the consequences of single headedness in serialization vs. multiple headedness in parataxis. It should be noted that serialization is aligned now with hypotaxis in single headedness, and shares with hypotaxis all the properties listed in (14) which do not belong to parataxis.

Returning to our case, the coordination identified possesses all the properties in (13) that are relevant for Chinese ((13c) and (13e) being beside the point due to the lack of inflectional morphology). Moreover, it is multiply headed with the consequent properties of parataxis in (14).

For meta-theoretical consideration of "markedness" mentioned earlier, we may reasonably assume that structure (4) associated with non-conjunction readings (Purpose being just one of them) belongs to the subordination (hypotaxis) in the syntax of Chinese, unless evidence otherwise indicates that it takes some other marked structure. (4) is singly headed with the properties in (14), as opposed to parataxis (but in line with serialization). We will not repeat the evidence, since it is just the opposite conclusions from the tests in (6), (7), (9), (11) etc., summarized above.

4. Distinguishing between Subordination and Serialization

There is still more to say about the subordinate structure in (4). The head of the predicate should be identified, which is usually where the morphosyntactic locus is located (Zwicky 1985). Since the morphosyntactic locus is obscured by the meagerness of the inflectional morphology, we may rely on the semantic argument to determine the head of the verbs in series. According to meaning, VP2 is the head with the modifier VP1 in the case of the manner reading, and vice versa for the purpose reading.

Chao (1968: 326) proposes structure (4) as a SVC, because it is different from subordination in that the SVC rarely takes the subordinate particle *de* after VP1, which is unlike ordinary adverbial (and adjectival) expressions, which take *de*. Relevant examples are in (15), where (15a) and (15b) are our own examples.

- (15) a. piaoliang de fangzi AP + NP -> NP
pretty de house
'a pretty house'

- b. gongzuo de difang VP + NP → NP
 work de place
 'a working place'
- c. manman de pao AP + VP → VP
 slow de run
 'run slowly'
- d. bu ting de ku VP + VP → VP
 not stop de cry
 'cry incessantly'
- e. xie de hao VP + AP → VP
 write de good
 'write well'
- f. xiang de liu lei VP + VP → VP
 think de flow tear
 'miss with tears in eyes'

The heads of (15a) and (15b), for instance, are the NPs, preceded by adjectival modifiers. The second VPs in (15c) and (15d) are the heads, following adverbial modifiers.⁶ The subordinate structure in (2)/(4) is parallel to (15d) where VP1 is an adverbial modifier to the head, VP2. The difference is that while (2) cannot have *de* between VP1 and VP2 (*?Ni gui-xialai *de* qiu Zhang-san), (15d) must have *de* in between (*?bu ting ku.).

It is unconvincing to exclude (2)/(4) from subordinate structures only on the basis of such a distinction. As Chao notes, instances of VP + VP → VP with VP2 as the head, as in (15d), are not many in Chinese (while the structure of (2)/(4) is productive.). Moreover, *de*'s are optional in other structures like (15b) and (15c), depending on the interaction among the grammatical components, especially morphology, syntax and phonology of the language.⁷ However, a certain generalization can be made about the presence or absence of *de* in the structure of VP1 + VP2 with VP2 as the head. It seems that one of the necessary conditions on the presence of *de* is that VP1 has a proper modifier;⁸ otherwise, *de* is absent.

- (16) a. [manman baidong] de tiao [AP + VP]_{vp} + VP
 slow swing de jump
 'jump with arms swinging slowly'
- b. [zuo de haohao] de xie [VP + AP]_{vp} + VP
 sit de good de write
 'write with proper sitting posture'
- c. [pao de hen kuai] de han [VP + AP]_{vp} + VP
 run de very fast de shout
 'shout while running fast'
- d. Ta gui de hen di de qiu Zhang-san.

he kneel *de* very low *de* beg Zhang-san
'He knelt with his head lowed to beg Zhang-san.'

de must be present when VP1 and VP2 are in construction where VP1 has a proper modifier and VP2 is the head, as seen in (16a), (16b) and (16c). The issue bears on our case in (16d), which is modified from (2), where *de* has to be there. Without *de*, all of the expressions in (16) would be unacceptable. *de* is absent between VP1 and VP2 in (2) since VP1 *gui-xialai* lacks a proper modifier. We therefore conclude that the presence/absence of *de* is not a necessary condition on defining subordination.

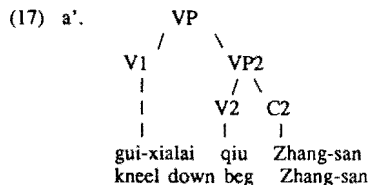
Turning now to the distinction between subordination and serialization, the most convincing evidence for us to classify (2)/(4) into subordination/hypotaxis rather than serialization would be its internal syntax, for although (13) and (14) capture significant generalizations in distinguishing constructions in some African languages and no matter how hard we would try to draw on them, some of the items admittedly bear vaguely on the issue in Chinese, again because the language has no or little inflectional morphology to indicate GRs.

Zwicky (p.c.) suggests several possible structures for the verbs in series, as in (17), in which C1 and C2 stands for the semantic modifiers or arguments of V1 and V2 respectively. By assuming that V1 is the head, (17a) is subordination, where V1 takes a phrasal (VP) complement, as the English *v_p[v₁ would [v_p visit relatives]]*. Another possibility is the structure (17b), where V1 only takes a lexical complement (V2). The issue is whether V2 forms a syntactic constituent with C2. There is constituency in VP-complement construction in (17a). But the constituency is not warranted in a V-complement construction in (17b). Sometimes one even wants to claim that V1 forms a compound or a large morphological unit with V2, as in (17c) (to be discussed in section 6). A certain amount of freedom of ordering of sister constituents is possible, for, in case of manner reading in (2a'), the head V1 and the lower VP in (17a) should switch over the positions in Chinese.

- (17) a.
$$\begin{array}{c} \text{VP} \\ / \quad | \quad \backslash \\ \text{C1} \text{ V1} \quad \text{VP} \\ \quad \quad / \quad \backslash \\ \quad \quad \text{V2} \text{ C2} \end{array}$$
- b.
$$\begin{array}{c} \text{VP} \\ / \quad / \quad \backslash \quad \backslash \\ \text{C1} \text{ V1} \text{ V2} \text{ C2} \end{array}$$
- c.
$$\begin{array}{c} \text{VP} \\ / \quad | \quad \backslash \\ \text{C1} \quad \text{V} \quad \text{C2} \\ \quad \quad / \quad \backslash \\ \quad \quad \text{V1} \text{ V2} \end{array}$$

There are consequences which follow from the constituency distinction between (17a) and (17b/c): No syntactic rules may refer to V2+C2 in (17b/c). Now we can safely assign (17a) to subordination, as in (17a') below, since the V2+C2 as a constituent VP2

participates in the VP2-fronting, as illustrated in (7). Structures of (17b) and (17c) are unwarranted for subordination, since given them the rule would have to refer to the non-constituent, the V2+C2 sequence.



Let us further suppose that C1 or C2 cannot intervene between V1 and V2 not only in (17c), but also in (17b), on the assumption that the ordering is strictly stipulated in the grammar at V [bar 0] level as they are for (17b) and (17c). The task now is to attest (17b) or (17c) in Chinese.

We now hypothesize that a real SVC in Chinese takes the structures in (17b) or (17c), for we shall demonstrate that the lai-construction seems to be syntactically distinct from the unmarked subordination (17a), and takes the marked structure (17b), or even (17c) (in section 5 and 6).

Before we discuss a case of SVC, we would like to briefly examine constructions similar to SVC. They are the coverb construction and the pivotal construction. Both appear to be verbal expressions in series. LT (p.98) explicitly deny that the coverb construction is a SVC; Chao (1968: 327) rejects the pivotal construction as a SVC. Here we will support their claims by examining the constructions in our framework. Specifically, we will check whether the apparent VP1 and VP2 in series have internal GR to each other, or whether VP2 can be fronted like (2)/(4), or whether some element can intervene between V1 and V2. A construction is subordinate if it passes one of these tests.

Coverbs are words which always take an object, and such coverb phrases precede the main verb (LT: 97). Coverbs comprise a listable set in Chinese, as in (18), with examples in (19), both being from LT (p.97).

- (18) gei 'give' yong 'use' zai 'at, in'
 dui 'to' cong 'from' ti 'in place of'

- (19) a. Zhang-san [gei]_{v1} wo [mai]_{v2} yifu.
 Zhang-san for me buy clothes
 b. Zhang-san [yong]_{v1} kuaizi [chi]_{v2} fan.
 Zhang-san use chopsticks eat rice

LT argue that coverbs are not main verbs, but rather are prepositions, functioning as case markers for NPs, much like the Benefactive, Instrumental or Locative cases in other languages. Also they cannot take certain aspectual particles and undergo morphological reduplication like ordinary verbs. For these reasons, LT (p.98) do not consider the coverb

construction to be a SVC in their sense.

The coverb construction as a SVC is also unwarranted in our framework for the following reasons. The preposition-like coverbs indicate the internal GR between *wo* 'me' and *mai* 'buy' in (19a), although the GR is implicit morphosyntactically. Moreover, VP2 fronting is allowed, for instance, in (19b), *Chi fan, Zhang-san yong kuaizi*. This suggests that (19b) assumes the subordinate structure in (17a). Finally, the argument NP of *gei* 'for', *wo*, for instance, intervenes between V1 and V2 in (19a), against the ordering assumed above for SVC.

In Chao (1968: 327), a pivotal construction is composed of a series of verbal expression V1, a nominal expression, and another verbal expression V2, with the nominal expression serving both the object of V1 and the subject of V2, as in (20).

- (20) a. Women [pai]_{V1} ta [zuo]_{V2} daibiao.
 we assign he do representative
 'We delegate him to be representative.'
- b. Ta [qing]_{V1} ni [bangmang]_{V2}
 he ask you help
 'He asks you to help.'

In Chao's definition, a SVC is different from the pivotal construction in that, in the former, V1 and V2 must have the same subject. To us, the pivotal construction is not a SVC for the same reasons as the coverb construction: an internal GR between VP1 and VP2, i.e., the NP *ta* 'he' in (20a) as both the object of V1 and the subject of V2, the possibility of fronting VP2, and the intervention of V1's argument *ta* between V1 and V2.

5. The Lai-Construction as a SVC

Since all of the constructions studied so far can be classified into subordinate or coordinate structures, one may doubt that Chinese has a SVC at all. In this section, we will analyze a construction belonging to the SVC in our sense, similar to the go-Verb construction in English, as in *You should go see a doctor today.*⁹ We call it the lai-construction, for V1 in the construction is typically *lai* 'come' or *qu* 'go'. *lai* and *qu* are verbs, as they meet the major requirements of verbs in the language. Typically, they can function as a main verb in a sentence, take aspectual markers, and can undergo certain morphological processes typically applied to verbs such as reduplication for diminutive aspect (see more verbal tests in Dai (1990b: 12-14)), as in (21).

- (21) a. Ta lai (le) liangci.
 he come Perf. twice
- b. Ta qu (le) liangci.
 he go Perf. twice
- c. Lai-yi-lai/qu-yi-qu
 'come/go for a little while'

Examples of the *lai*-construction are provided in (22), (23) and (24).

- (22) a. *Ta lai shang ban.*
 he come go up shift
 ‘He comes to work.’
 b. *Ban, ta lai shang.*
 c. **Shang ban, ta lai.*
- (23) a. *Ta qu guang gongyuan*
 he go wander park
 ‘He goes to see a park.’
 b. *Gongyuan, ta qu guang.*
 c. **Guang gongyuan, ta qu.*
- (24) a. *Ta lai xuexi yingyu.*
 he come learn English
 ‘He come to learn English.’
 b. *Yingyu, ta lai xuexi.*
 c. **Xuexi yingyu, ta lai.*

The a-forms are of default word order, in which a subject *ta* is followed by V1, *lai* or *qu*, and V2 with its (object) argument. The b-forms illustrate that the topicalization preposes the object of V2 to the front. It follows that (22)-(24) are not parataxis, because if they were, the CSC would be violated. Supporting evidence is that phonological pause is prohibited between V1 and V2, for otherwise a conjunction reading would be enforced by the pause, causing a structural conflict between coordination and serialization.

The c-forms demonstrate that the VP2-preposing is not allowed, in contrast with hypotaxis in (25) and (26) where the preposing is allowed (An aspect marker *zhe* is added in (26b) for it to be acceptable. Also cf. (7)).

- (25) a. *Ta cheng che shang ban.*
 he take bus go up shift
 ‘He takes a bus to go to work.’
 b. *Ban, Ta cheng che shang.*
 c. *Shang ban, ta cheng che.*
- (26) a. *Ta pao/zou shang ban.*
 he run/walk go up shift
 ‘He goes to work by running/walking.’
 b. *Ban, ta pao/zou zhe shang.*
 c. *Shang ban, ta pao/zou.*

We note that the grammaticality judgements on the c-forms vary across speakers.

Some speakers (called group A) agree on the grammaticality status indicated above; some (group B) accept the c-forms in (22)-(24), in addition to (25)-(26); and some (group C) accept neither the c-forms in (22)-(24) nor in (25)-(26). But we have encountered no speakers who would accept the c-forms in (22)-(24) while rejecting those in (25)-(26). Without any context, however, the a-forms is the most natural for the speakers in group A and B, and the c-forms is the least, with the b-forms in between. Perhaps the c-forms in (22)-(24) are accepted by group B only in contrasting or listing events, as in the answer to a question about the presence of a person. We suspect that even group A may accept (27) in this context.

- (27) Guang gongyuan, ta lai; shang ban, xuexi yingyu, ta bu lai.
 wander park he come go up shift learn English he not come
 'He comes to walk in the park, but not to work or learn English.'

This fact is reminiscent of definite NPs which are acceptable in the there-construction in English only in listing them, as in (28b) serving as an answer to the question in (28a):¹⁰

- (28) a. - How many guests are there in your party?
 b. - Well, there are Mary, the president, Bill, the Smiths ...

Grammaticality judgements on the c-forms in (22)-(26) are crucial in our analysis. If the grammaticality judgements on the c-forms of (22)-(26) are representative (or at least of certain dialects of Chinese, say, the speakers in group A), then (22)-(24) would be expected to have the structure in (29), (25)-(26) to have (30), the former being SVC in our hypothesis whereas the latter being hypotaxis. Given that the conditions on the VP2-preposing are met, as in (25c) and (26c), what seems to prevent "the VP2" from being preposed in the c-forms of (22)-(24) would be that in (29), V2 (*shang*, *guang* or *xuexi*) does not form a syntactic constituent with its own semantic object argument (*ban*, *gongyuan* or *yingyu*, respectively). The ungrammaticality of the c-forms in (22)-(24) would directly follow from the assumption that the VP2-preposing cannot apply because the rule must refer to syntactic constituents. (25c) and (26c) are acceptable, since the constituency condition is met, as in (30).

- (29) cf. (17b) VP
 / | \
 V1 V2 NP
 | | |
 lai shang ban
 qu guang gongyuan
 lai xuexi yingyu

- (30) cf. (17a) VP
 / | \
 V1 NP VP2
 | | / \
 | | V2 NP
 | | | |
 cheng che shang ban
 pao/zou shang ban

Several morphosyntactic correlates to SVC are expected of (29). First, arguments or modifiers of V1 and V2 cannot intervene between V1 and V2. This would follow from the ordering of sister constituents stipulated at V [bar 0] level and is borne out in the examples below.

- (31) a. Ta qu san xiaoshi le.
he go three hour Perf.
'He was away for three hours.'
- b. Ta shang ban san xiaoshi le.
he go up shift three hour Perf.
'He worked for three hours.'
- c. Ta qu shang ban le.
he go go up shift Perf.
'He went to work.'
- d. *Ta qu san xiaoshi shang ban (le).
he go three hour go up shift (Perf.)

In (31c), both V1 and V2 in series are modifier-free. When they are alone as main verbs in a sentence, they can take a post-modifier of time, as in (31a) and (31b) respectively. But this modifier cannot intervene between V1 and V2 in SVC, as in (31d), in contrast with the corresponding hypotactic cases in (32), which assumes the structure in (30), where such intervention is allowed, as in (32d).

- (32) a. Ta pao/zou san xiaoshi.
he run/walk three hour
'He ran/walked for three hours.'
- b. Ta shang ban san xiaoshi.
he go up shift three hour
'He worked for three hours.'
- c. Ta pao/zou zhe shang ban.
he run/walk Asp shift Perf.
'He went to work by running/walking.'
- d. Ta pao/zou san xiaoshi shang ban.
he run/walk three hour go up shift
'He needed three hours to run/walk to work.'

A preverbal modifier of V2, *haohao* 'seriously', for instance, seems to be able to intervene between V1 and V2 in (31c), contrary to the non-intervention condition, as in (33a). Similarly, the object argument of V1, *zher* 'here', can be placed between the two verbs, as in (33b).

- (33) a. Ta qu haohao shang ban le.
 he go seriously go up shift Perf.
 'He went to work seriously.'
- b. Ta lai zher shang ban le.
 he come here go up shift Perf.
 'He came here to work.'

Interestingly enough, however, these intervening elements makes (33) hypotactic rather than SVC, for the VP2 fronting appears to be allowed now, as in (34a) and (34b), as opposed to (22c).

- (34) a. Haohao shang ban, ta qu le.
 seriously go up shift he go Perf.
 'To work seriously, he goes.'
- b. Shang ban, ta lai zher le.
 go up shift he come here Perf.
 'To work, he came here.'

The second correlate of the lai-construction to SVC is that, as mentioned earlier, V1 and V2 in SVC must agree in aspect, as in (35a), where *le* is assumed as a sentential aspect marker. But (35b) has two distinct aspect markers, which appears to be problematic for the SVC analysis. However, in this case, a phonological pause is obligatory between V1 and V2 (indicated by the comma in (35b)), which marks a coordinate structure instead in the language. Consequently, the CSC must be observed here; see (35c) and (35d) where the extractions are not allowed.

- (35) a. Ta lai shang ban le.
 he come go up shift Asp.
 'He has come to work.'
- b. Ta lai le, shang zhe ban.
 he come Asp go up Asp shift
 'He has comes and is working now.'
- c. *Ban, ta lai le, shang zhe.
 d. *Shang zhe ban, ta lai le.

As James Tai (p.c.) points out to us, either V1 or V2 of a subordinate structure can be independently negated by *bu* or *mei* or their variants in Chinese, as in (36), as opposed to (37) for SVC, in which the negator must be with V1 but not with V2. And this is the third correlate of the lai-construction to SVC.

- (36) a. Ta zai tushuguan kan shu.
 he at library read book
 'He read books in the library.'

- b. Ta bu zai tushuguan kan shu.
he not at library read book
'He is not in the library reading books.'
 - c. Ta zai tushuguan mei kan shu.
he at library not read book
'He is in the library but doesn't read books.'
- (37) a. Ta bu/mei lai shang ban.
he not come go up shift
'He didn't come to work.'
- b. *Ta lai bu/mei shang ban.
he come not go up shift

In fact, the prohibition of negation on V2 should be regarded as a feature of SVC, distinctive not only from hypotaxis but also from parataxis. An example in which negation is put on V2 in parataxis is provided in (38).

- (38) Ta meitian du shu bu kan bao.
he everyday read book not see newspaper
'He reads books but no newspapers every day.'

Another interesting fact follows from the prohibition of negation placement on V2. As demonstrated in (33a) and (34b), the intervention of *haohao* makes (31c) hypotactic. We therefore expect the negation on V2 to be possible, which is indeed the case, as in (39).

- (39) Ta qu mei haohao shang ban.
he go not seriously go up shift
'He went, but didn't work seriously.'

While (36) and (37) support the claim that the lai-construction differs from subordination, a potential problem arises: In (37a), V2 + object can be fronted, giving *Shang ban, ta bu/mei lai.*, which is contrary to the constituent structure in (29). However, the sentence is acceptable only in the context of contrasting or listing events, as mentioned above, while its subordination counterpart is not necessarily so, as in *Shang ban, ta bu pao/zou.*, modified from (26c).

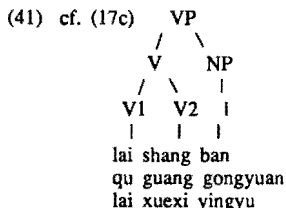
Summarizing, the lai-construction is a SVC, since the V2 in series does not seem to form a syntactic constituent with its own arguments or modifiers as hypotaxis does. It follows that, in Chinese, hypotaxis, parataxis and serialization may be typologically differentiated with respect to the application of the syntactic rules of the topicalization of the object of V2 and the preposing of VP2, as below.

- (40) a. Both the topicalization and VP2 preposing may apply in hypotaxis.
- b. Neither the topicalization nor the VP2 preposing may apply in parataxis.
- c. Only the topicalization, but not the VP2 preposing, may apply in serialization.

The putative structure of SVC also has the following morphosyntactic correlates: no intervention of arguments or modifiers of V1 and V2 between V1 and V2; the obligatory agreement in aspect marking of V1 and V2; and the obligatory attachment of negators to V1 rather than V2.

6. V1+V2 as a Morphological Word

In the last section, we suggested that V2 and its object in the lai-construction cannot be fronted like the VP2 in the subordination, because the V2 and its object do not form a syntactic constituent, and thus appear to take the structure in (29) rather than in (30). However, an alternative explanation seems to be available, and even preferable: a stronger claim could be made from the fact that nothing (neither the argument nor modifier of V1 or V2) may intervene between the verbs in serialization: in the lai-construction, V1 and V2 forms a compound,¹¹ thus taking the structure in (17)c, as in (41).¹²



If V1+V2 is a syntactic compound word, then the prohibition on the "VP2"-fronting in SVC can be directly accounted for by the Lexical Integrity Hypothesis (Jackendoff 1972) or the Principle of Morphology-Free Syntax (Zwicky & Pullum 1986), i.e., no syntactic rules may refer to the internal structure of a word, for otherwise V2 as part of the compound word would be syntactically moved. Unfortunately, the intervention constraint merely makes the V1+V2 serial look like a compound,¹³ which is NOT the case. The reason is that the V1+V2 here is NOT a syntactic word, since no evidence shows it is a minimal constituent like a V1+V2 compound syntactic rules would refer to in the language.

Zwicky (1990) claims that the intervention constraint on the go-Verb construction in English follows from the fact that the verbs in series form a large morphological unit, or a super-morphological word (henceforth *supermoreme*, as referred to by Zwicky). Below, we will argue for a parallel structure in Chinese. The V1+V2 here, though not a syntactic compound word, nevertheless forms a morphological word, for the constraint is so strict that even the inflectional aspect marker of V1 is not allowed, as in **Ta lai-le shang ban*.¹⁴

The phonology of Chinese supports the analysis of V1+V2 as a morphological word. V1+V2 participates in some word internal sandhi. Cheng (1973: 34) states a phonological rule Final Elision (FE), which optionally deletes the rime of a second syllable and resyllabifies its bilabial nasal onset as the coda of the first syllable, demonstrated in (42a/b).¹⁵ Dai (1990c) extends the application of the FE to all bilabial stops as the onsets of the second syllable, as in (42c/d), and argues explicitly that the FE is a word internal sandhi,¹⁶ for while the rule applies within a word in (42), it is blocked across a word boundary, as in (43), which is from Dai (1990c).

- (42) a. wo-men --> wom b. ta-men --> tam
 I PL 'we' he PL 'they'
- c. ba-ba --> bap d. jiu-bu qi-che --> jiup qi-che
 dad 'dad' nine-Measure car 'nine cars'
- (43) Ta meng le tou. --> *Tam le tou.
 he mask Perf. head
 'He has masked his head.'

In the case under discussion, we observe that, as in (44), where the onset of V2 in the lai-construction is a bilabial, the FE applies, indicating the rule ignores the syntactic demarcation.

- (44) a. qu-bu yi-fu --> qup yi-fu b. qu-bu yu --> qup yu
 go mend clothes go catch fish
 'go mend clothes' 'go catch fish'
- c. lai-pu chuang --> laip chuang
 come make bed
 'come make bed'

Admittedly, the application of the FE only shows that V1+V2 in question forms one PHONOLOGICAL WORD, but never entails that the string is a morphological word. However, the FE suggests two things. First, the default relationship among syntactic word, phonological word and morphological word (Zwicky 1990) is overridden: "word" in the three components of grammar may not correspond to one another, and here we have two syntactic words mapping into only one phonological word. Second, there is possibility that one-to-one correspondence holds between phonological word and morphological word in our case.

Telling facts for V1+V2 as a morphological word must lie in the morphology proper of the language. Before proceeding, let us roughly define WORD below, as it is an ununified construct throughout the components of grammar (cf. Dai (1990b) and the references therein):

- (45) SYNTACTIC WORD is a minimal syntactic constituent to which syntactic rules may refer; PHONOLOGICAL WORD is a certain prosodic domain in which phonological rules may apply (as opposed to external (or phrasal) sandhi rules); and MORPHOLOGICAL WORD is a certain domain in which morphological rules may apply.

Polish and Czech are among languages in which "word" may be defined by the location of stress in the phonology, and Latin and Miwok by the location of inflectional morpheme in the morphology (Dai 1990b: 11). Based on the assumption that an inflectional morpheme closes a morphological word, let us further assume the following without further argument:

- (46) The aspect marker *le* or *zhe*¹⁷ in Chinese is an inflectional morpheme which

closes a word (verb).

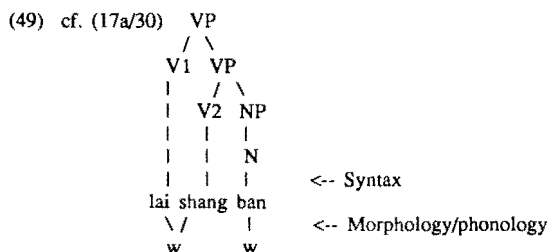
Now the data below indicates that *-le* can independently attach to V1 *lai* or V2 *chang* when they occur alone respectively, as in (47a/b). When V1 and V2 are in SVC, however, only V2, but not V1, can be so suffixed, as in (47c/d). It follows from the assumption on morphological word in (45) and (46) that there is no morphological word boundary between V1 and V2 in serialization and that V1+V2 forms one morphological word.

- (47) a. Ta lai-le liangci.
he come Perf. twice
'He came twice.'
- b. Ta chang-le liangci.
he sing Perf. twice
'He sang twice.'
- c. Ta lai chang-le liangci.
he come sing Perf. twice
'He came and sang twice.'
- d. *Ta lai-le chang liangci.
he come Perf. sing twice

For the lai-construction to be licensed, the morphology-syntax co-satisfaction and interface links are needed in Zwicky's (1990) sense. The phonology also interfaces here.¹⁸ The syntax would require conditions in relevant syntactic rules, i.e., the structure of (29); the morphology and phonology would require conditions on the lexemes V1 and V2 to be one morphological and phonological word. Here we have a mismatch between syntactic word and morphological/phonological word, a structure given in (48), where the upper part is the syntax, and the lower part the morphology and phonology (w = WORD).

- (48) cf. (29) VP
 / | \
 V1 V2 NP
 | | |
 | | N
 | | | <-- Syntax
 lai shang ban
 \ / | <-- Morphology/phonology
 w w

But we must point out one fault if the lai-construction assumes the syntactic structure in (48). A generalization is missed that V2 and NP in (48), or rather, V2 and its following sister constituent, ALWAYS form a syntactic VP constituent elsewhere in the syntax of Chinese, just the same as the verb and its following constituent do in the go-Verb construction in English (Zwicky, p.c.). Thus our choice in structures must shift from (48) to (49), the syntax of which assumes the structure in (17a) or (30), the subordinate construction.



Now that V2 and its object NP forms a constituent, what really prevents the VP(2)-fronting from applying? The answer is that the blocking is from both the morphology and phonology: the VP-fronting would result in a morphological and phonological discontinuity of word, a big offense to the integrity of word.

7. Conclusion

In this paper, three distinct syntactic constructions have been identified from the serial verb expressions in Chinese: coordination, subordination and serialization. Below are summarized the typological similarities and differences among the three constructions in Chinese, where + and - represent "possible" and "impossible" respectively.

(50) TYPOLOGY	<u>Coordination</u>	<u>Subordination</u>	<u>Serialization</u>
<u>Syntax</u>			
Presence of V1 object	+	+	-
Extraction of V1 object	-	+	-
Extraction of V2 object	-	+	+
Extraction of VP2 (V2+object)	-	+	-
Negation on V2	+	+	-
A-not-A question with V1	-	+	+
Alternative question with V2	+	-	+
<u>Semantics</u>			
More than one assertion	+	-	-
<u>Morphology</u>			
Asp. disagreement btwn V1 & V2	+	-	-
Asp. marking on V1	+	+	-
<u>Phonology</u>			
Pause between V(P)1 & V2	+	-	-
FE sandhi between V1 & V2	-	-	+

Most importantly, coordination is syntactically separated from subordination and serialization with respect to its sensitivity to the CSC. Serialization differs from

subordination in that, in the former, but not in the latter, the application of the VP2-fronting rule is blocked. The account for the blocking lies in the fact that V1+V2 in serialization makes one morphological and phonological word, which is in turn predicted by the Lexical Integrity Hypothesis (Jackendoff 1972) or the Principle of Morphology-Free Syntax (Zwicky & Pullum 1986). And needless to say, the two notions largely cover the strict intervention constraint on V1+V2 in the SVC, as no syntactic material may interrupt a word.

Notes

* An earlier version of this paper, "Reclassification of Serial Verb Expressions in Mandarin Chinese", was presented at The Ohio State University Mini-Conference on Serial Verbs, held on May 26-27 in Columbus, Ohio. Thanks go to the participants of the Conference, especially to Brian Joseph, James McCawley, Mark Libucha, Salikoko Mufwene, Eric Schiller, James Tai and Arnold Zwicky for their comments on and criticisms of the earlier presentations of this paper.

1. Henceforth, we would like to simply use "Zwicky" to refer to this informal and unpublished lecture manuscript for a couple of advanced syntax courses (1987-89) at the Ohio State University, without listing it in References of this paper.

2. There is generally no functional word between the two verb phrases indicating the GR in the three constructions, unless overtly marked in this paper.

3. (9a) shows that *bushi* may single out the coordination, supporting evidence being that no extraction is allowed. Noonan (1985: 77) observes that each clause may be independently negated in parataxis, whereas with serialization only one negative is allowed and has the entire construction as its scope (cf. note 5 and section 5). But the negation of V1 by *bu* in (9b) is not a sufficient condition on defining SVC in Chinese, for V1 in parataxis, hypotaxis and serialization can each be negated. We will later show that the sufficient negation condition would be:

- (i) Either V1 or V2 can be negated by *bu* in parataxis and hypotaxis.
- (ii) Parataxis and serialization can be negated by *bushi* on V1.
- (iii) Only in SVC can't V2 be negated.

4. Chao (1968: 325) claims that the SVC is like coordination in that it can be usually reversed and remains grammatical, but differs from it in not being reversible without involving a change in sentence meaning. In our analysis, however, both are coordination for their sensitivity to the CSC. Thus, Chao's "SVC" is the consecutive action reading of coordination; his "coordination" is associated with the non-consecutive action readings. To us, the only syntactically and semantically reversible structure is the coordination associated with the interpretations of alternating action and simultaneous action. For example, (2) with the coordination in (5) and with the alternating reading in (2d), repeated below, is syntactically and semantically reversible, as in (2'), basically maintaining the original syntax and truth conditions.

- (2) Ni gui-xialai qiu Zhang-san.
you kneel down beg Zhang-san
(2) d. 'You knelt down and begged Zhang-san.'
- (2') Ni qiu Zhang-san gui-xialai.
you beg Zhang-san kneel down
'You begged Zhang-san and knelt down.'

The coordinate structure with consecutive reading is syntactically reversible but with a probable change in meaning; and the reversibility of internal structures of subordination depends on the syntactic rules of the language (For instance, (2)/(2a)/(4) is syntactically irreversible in Chinese.).

5. It should make clear here that V2 in both parataxis and hypotaxis can in principle be independently negated in Chinese, in contrast to SVC, where negation on V2 is disallowed (cf. note 3 and section 5).

6. Recent literature has hot debates on which constituent is the head in (15e) and (15d). We have no intention of becoming involved in the issue here, for our main concern is the presence/absence of *de* between the head and modifier. Following the classical view, we assume that the heads in (15e) and (15f) are the first VP, followed by resultative modifiers.

7. We will not explore all types of conditioning here, but refer interested readers to Dai (1990a) for the discussion.

8. It remains to be worked out what "proper" modifiers are. At this point, the modifiers cannot be directional adverbials like *xia-lai* 'down come' in (2) at least.

9. A couple of statements should be made clear before proceeding. First, we are not claiming that the *lai*-construction in Chinese and the *go*-Verb construction in English are the same. But they are similar at least in some respects. For instance, the basic lexical semantics of V1 is the same, i.e., *lai* 'come', *qu* 'go' etc. It is interesting to see languages making use of *go/come*-expressions for SVC. Moreover, there is strict non-intervention condition on both constructions (to be discussed). Second, in this pioneer study of SVC in Chinese, the *lai*-construction will be claimed as one type of SVC. The door is certainly open for exploring other types of SVC in the language. Third, the lexeme *lai* or *qu* may occur in similar constructions. The syntactic relationship among them is worth examination (Tai, p.c.), e.g., *lai shang ban* [go-up-shift] vs. *shang ban lai* [up-shift-go]. But we won't explore the topic here because of the scope of this paper.

10. Perhaps (28) and (29) are cases of "mentioning" rather than "using" language discussed in the literature.

11. cf. Chao (1968) claims that if two verbs in series are both monosyllabic and takes no objects, then they should be analyzed as compounds, although he gives no evidence for his claim.

12. In (37), V branches into V1 and V2, which is morphological structure of word, rather than syntactic structure. But this is only for illustrative convenience, by no means implying that we assume the notion that "morphology is the syntax of word" and the like.

13. Examples of syntactic compounds are *television table* in English, and *sheng zhang* [be born - grow] 'grow' in Chinese.

14. This might follow from one of the six characteristics we would expect a supermorpheme to exhibit: reference to shape (Zwicky 1990), i.e., the lai-construction requires the base form for V1.

15. Perhaps the observation is due to Chao (1968) or even earlier researchers.

16. More conditions must be put on the application of the FE than observed by Dai (1990c) and in the traditional literature. For example, the sandhi does not seem to work if the vowel of the second syllable is a front vowel, nor if the V2 in the SVC is bisyllabic. We won't explore these conditions in detail, since they do not affect our argument here.

17. Here *-le* is a perfective marker attached to a verb, in contrast to the homophonous *le* at the sentence-final position, as in (35a), which marks a "current relevant state" (Li & Thompson 1981: 242). The progressive marker *-zhe* never attaches to *lai* or *qu*, due to the semantic incompatibility between them in Chinese, and therefore we won't use it as an example for the following discussion.

18. The phonology-syntax interface should be considered as secondary, since the FE is an optional rule.

References

- Chao, Yuen Ren. (1968). A Grammar of Spoken Chinese. Berkeley & Los Angeles: University of California Press.
- Cheng, Chin-chuan. (1973). A Synchronic Phonology of Mandarin Chinese. The Hague/Paris: Mouton.
- Corum, Claudia, T. Cedric Stark-Smith & Ann Weiser (eds.) (1973). You Take the High Node and I'll Take the Low Node. Chicago Linguistic Society.
- Dai, John Xiang-ling. (1990a). Some issues on A-not-A questions in Chinese. Journal of Chinese Linguistics 18:2.285-316.
- Dai, John Xiang-ling. (1990b). Historical morphologization of syntactic structures: Evidence from derived verbs in Chinese. Diachronica VII:1.9-46.
- Dai, John Xiang-ling. (1990c). Deletion under identity condition: A-not-A questions in Chinese revisited. Paper presented at the Second Northeast Conference on Chinese

Linguistics at the University of Pennsylvania, Philadelphia, PA, May 4-6, 1990.

- Jackendoff, Ray. (1972). Semantic Interpretation in Generative Grammar. Cambridge: MIT Press.
- Li, Charles. N. & Sandra A. Thompson (1973). Serial verb constructions in Mandarin Chinese: Subordination or coordination? In C. Corum et al (1973) eds. 96-103.
- Li, Charles. N. & Sandra A. Thompson (1981). Mandarin Chinese: A Functional Grammar. Berkeley: University of California Press.
- Noonan, Michael. (1985). Complementation. In T. Shopen (1985) ed. 114-140.
- Ross, John R. (1967). Constraints on Variables in Syntax. MIT dissertation. Bloomington: Indiana University Linguistics Club.
- Shopen, Timothy. (ed.) (1985). Language Typology and Syntactic Description II: Complex Constructions. Cambridge: Cambridge University Press.
- Tai, James H.-Y. (1973). Conjunction Reduction. Indiana University dissertation. Bloomington: Indiana University Linguistics Club.
- Zwicky, Arnold M. (1985) Heads. Journal of Linguistics 21.1-30.
- Zwicky, Arnold M. (1990). Syntactic words and morphological words, simple and composite. To appear in Yearbook of Morphology 3.
- Zwicky, Arnold & Geoffrey Pullum. (1986). The principle of phonology-free syntax: Introduction remarks. The Ohio State University Working Papers in Linguistics 32.62-91.